July 17, 1957

Dr. Martin Pollock
Medical Research Council
National Institute for Medical Research
The Ridgeway, Mill Hill
London, N.W. 7, England

Dear Martin:

This is in reply to your letter of the 8th of July.

Needless to say you would be afforded a royal welcome in Urbana. I had tacitly assumed that there was no doubt you would pay us a visit. The time you mention is perfectly convenient. The Urbana "area" you mention is relatively large. However, I think we can manage to get you to most of the places of interest. Presumably you will be coming from the West and, therefore, you would most likely wish to visit St. Louis and Madison first. We could easily get you to Bloomington from here. Cleveland is almost halfway to the East coast and you could stop there on your way East.

I was rather surprised to learn that Nathan had told you nothing of what we were doing here. It would, however, take a letter of inordinate length to summarize in adequate detail all the things we are attempting to do. I can, however, perhaps give a brief summary. Virtually all of our efforts for the past year has gone into the development of subcellular systems capable of synthesizing enzymes in particular, and protein in general. We have two systems, one from B. megaterium, with which you are somewhat familiar from the Johns Hopkins' paper, and the other is derived from E. coli. The most interesting things being done with the megaterium system revolves around [A] the metabolic capacities of isolated nuclear preparations, and [B] the relation between the synthesis of RNA, DNA and protein. With respect to the last, we now have rather convincing evidence that every time an RNA molecule forms, a protein molecule of a peculiar nature is synthesized along with it. We have isolated this peculiar protein and are studying its chemical and physical properties. It should be noted that chloramphenicol does not stop the synthesis of this protein. This is the clue which misled many others.

In the coli system the most interesting findings are:
1. osmotic lysates can support the synthesis of virus DNA in extensive amounts which is permitting us to study in some detail the factors necessary for this synthetic system.

2. We have isolated from such lysates a particulate fraction which shows the ability to increase its β-galactasidase activity when supplemented with both amino acids and ATP. Whether this will turn out to be another Straub effect remains yet to be determined.

3. Low speed, [10,000 G for 5 minutes] pelletable fractions from osmotic lysates of E. coli behave in their synthetic capacities very much like similar preparations from megaterium with the exception that their nutritional requirements are quite different. In any case, they synthesize all the macromolecular components of interest, as well as specific enzymatically active protein.

We are now engaged in an extensive attempt at in-vitro recombination of such lysates from suitably marked genetic material. The purposes of these experiments are obvious. They are, however, in their infancy and little can be said as yet about them.

In return for all this mass of information, I should appreciate learning what is happening in your laboratory and in particular, with the very exciting Kramer phenomenon.

With kindest regards,

Sincerely yours,

S. Spiegelman
Professor of Bacteriology

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